

REMARKS

Reconsideration of the application is respectfully requested.

Claims 1, 5-8, 10-15 and 46 are before the Examiner. Amendments to the Claims are shown based on Claims 1-45 of the corresponding issued U.S. Patent No. 6,271,323 ("US-323".) Claims 1, 5, 6, 7, and 8 have been amended as previously discussed in the RCE filed October 12, 2007. Claims 2, 3, 4, and 9 have been cancelled. New Claim 46 has been previously added. Claims 1, 5-8, 10-15 and 46 remain in the instant application.

In the instant response, Claim 1 has been further amended to replace the term "C₂ to C₂₀ alkylene group" with the term linear C₂ to C₆ hydrocarbon group. Support for this amendment may be found at Col. 4, lines 57-58 of US-323. In addition, consistent with the RCE filed October 12, 2007, Claim 1 has been amended to further clarify that the recited catalyst system comprises a Group 15 containing tridentate ligated hafnium catalyst compound as previously recited in original Claim 4 of the instant application. Support for this amendment may be found, for example, at Col. 4, lines 56-57 of US-323. The term "metallocene type", resultant from a previous amendment, and objected to by the Office Action, has been amended to remove the word "type" consistent with the claims of US-323.

Claim 5 has been amended to properly depend from Claim 1.

Claims 6 and 7 have been amended to further clarify Applicants' presently claimed invention. Support for these amendments may be found, for example, at Col. 5, lines 39-57 of US-323, as previously discussed in the Response dated February 12, 2004.

Claim 8 has been amended to further limit R¹ and R² to a preferred embodiment. Support for this amendment may be found, for example, at Col. 5, lines 57-58 of US-323.

New Claim 46 has been added to recite a preferred embodiment of Applicants' presently claimed invention. Support for this amendment may be found, for example, at Col. 5, line 39 to Col. 6, line 40 of US-323.

No new matter has been added.

Double Patenting

Claims 1, 5-8, 10-15 and 46 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-38 of U.S. Patent No. 6,271,325 to McConville (hereinafter "McConville-325"). Upon indication of allowable subject matter in the present case, a Terminal Disclaimer will be filed as appropriate.

Claims 1, 5-8, 10-15 and 46 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-14 of U.S. Patent No. 6,300,439 to McConville (hereinafter "McConville-439"). Upon indication of allowable subject matter in the present case, a Terminal Disclaimer will be filed as appropriate.

Rejection under 35 U.S.C. §102

Claims 1, 5-8, 10-15 and 46 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,294,495 to Matsunaga (hereinafter "Matsunaga"). Applicants respectfully disagree.

Matsunaga is directed to an activated tridentate mono-anionic-ligand-based transition metal catalyst in a reduced oxidation state for olefin polymerization. Matsunaga fails to disclose or suggest Applicants' recited process comprising a Group 15 containing catalyst compound.

In particular, Applicants' recited limitation wherein R^1 and R^2 are independently a linear, C_2 to C_6 hydrocarbon group. Matsunaga only discloses an alkenyl group between the center ligand (E') and the outer ligand (E) of the structure shown in Matsunaga. In particular, Matsunaga only discloses compounds wherein E is a portion of an aromatic ring. This is in contrast to Applicants' presently claimed invention. Furthermore, Matsunaga fails to disclose or suggest combination of a Group 15 containing catalyst compound with a bulky ligand metallocene catalyst. Matsunaga thus fails to disclose or suggest all of Applicants' recited limitations.

However, the Action notes Matsunaga's recitation at Col. 1, line 16-28, wherein Matsunaga recites:

"The use of discrete biscyclopentadienyl-based and monocyclopentadienyl-based metal complexes for the polymerization of olefins is well known in the art. In a few cases, olefin polymerization has been demonstrated starting from discrete catalyst precursor complexes

with cyclopentadienyl-based ancillary ligand systems and reduced oxidation state metal centers such as in, for example, U.S. Pat. Nos. 5,374,696 and 5,494,874, both to Rosen, et. al.; WO 96/13529; and Theopold, Acc. Chem. Res., vol. 23, pp.263-270 (1990). However, these catalyst precursor complexes do not exhibit C2 or pseudo-C2 symmetries, useful symmetries with many metallocene catalysts.”

The Action then combines this general statement regarding the current state of the art with the disclosure at Col. 9, lines 50-60:

“The catalyst compositions of the invention can be used as described above individually for coordination polymerization or can be mixed to prepare polymer blends with other known olefin polymerization catalyst compounds. By use of mixtures, of coordination catalyst compounds, polymer blends can be prepared under polymerization conditions analogous to those using individual catalyst compositions. Polymers having increased molecular weight distribution ("MWD") for improved processing and other traditional benefits available from polymers made with mixed catalyst systems can thus be achieved.”

Again, Matsunaga makes a very broad statement that the catalyst can be mixed with other known olefin polymerization catalysts.

However, as Applicants disclose at Col. 2, lines 37-43:

“Others in the art have tried to produce two polymers together at the same time in the same reactor using two different catalysts. PCT patent application WO 99/03899 discloses using a typical bulky ligand metallocene-type catalyst and a conventional-type Ziegler-Natta catalyst in the same reactor to produce a bimodal polyolefin. Using two different types of catalysts, however, result in a polymer whose characteristics cannot be predicted from those of the polymers that each catalyst would produce if utilized separately. This unpredictability occurs, for example, from competition or other influence between the catalyst or catalyst systems used.”

Applicants’ statement is consistent with the long held view that catalysis is an unpredictable art. It has long been established that catalysis is generally considered unpredictable merely from the chemical nature of the catalyst. *Corona Co. v. Dovan* (USSC 1928) 276 US 358, 369. Catalytic effects are not ordinarily predictable with certainty. In *re Doumcai et al.* (CCPA 1960) 281 F.2d 215, 126 USPQ 408.

It is also well established that the known similarity between two materials may suggest the probability of the suitability of one material for a particular purpose when the other is known to be useful for that purpose. In *re West* (CCPA 1947) 160 F.2d 570, 73

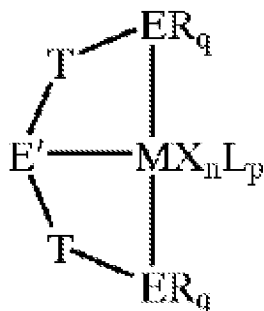
USPQ 227. However, the effect of a modification of one prior art catalytic process in a manner employed in another prior art process which employs a different catalyst was held unpredictable. See *Exparte Berger et al.* (POBA 1952) 108 USPQ 236.

No where in Matsunaga is found disclosure that the catalyst disclosed by Matsunaga is suitable for use in combination with a particular type of metallocene catalyst, i.e., a bulky ligand metallocene compound.

Furthermore, in response to the Actions suggestion that the claims do not specify what types of groups are considered “bulky” or “not bulky”, Applicants respectfully direct the Action’s attention to Col. 7, line 10 to Col. 11, line 52, wherein Applicants precisely define the term “bulky ligand metallocene compound, which is well understood by one of minimal skill in the art. Furthermore, since the claims are interpreted in view of the specification, and since Applicants disclose the meaning of “bulky ligand Metallocene-type catalyst compounds” from Col. 7, line 10 to Col. 11, line 52, Applicants submit that the term is precisely defined and readily apparent to one of minimal skill in the art.

The scope of the claims is not solely made on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364[, 70 USPQ2d 1827] (Fed. Cir. 2004). Indeed, the rules of the PTO require that application claims must "conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description."

To arrive at Applicants’ presently claimed invention, the artisan would first have to modify the structure of Matsunaga and in the total absence of any disclosure, substitute bridging group T of the formula:



with a C2-C6 hydrocarbon group from the description “the bridging group T contains any element or group of elements from Group 13-16 such as, for example, B, C, N, O, Al, Si, P, S, Ge, Se or the like...Preferred bridging groups include dialky, alkylaryl or diaryl silicon radical...”

Then, in the absence of any suggestion or motivation, the artisan would need to “select” bulky ligand metallocene catalyst compounds from the literally millions of choices embodied in the statement, “other known olefin polymerization catalyst compounds” provided by Matsunaga aided only by the statement “[t]he use of discrete biscyclopentadienyl-based and monocyclopentadienyl-based metal complexes for the polymerization of olefins is well known in the art.”

However, absent Applicants’ disclosure, it was not known if the above structure so modified would in-fact act as an olefin polymerization catalyst. Furthermore, absent Applicants’ disclosure, it was not known what type of interactions may occur as a result of combining such an unknown catalyst with a particular type of metallocene catalyst (i.e., a bulky ligand metallocene catalyst), and/or if the recited catalyst could in-fact be combined with a bulky ligand metallocene catalyst to produce polyolefins.

Matsunaga discloses literally millions of possible catalysts including essentially every type of metallocene catalyst known. In contrast, Applicants recite a particular type of metallocene catalyst which may be used to produce the presently claimed invention. The Action thus suggests that since the very specific catalyst of the presently claimed invention could be included with the generic disclosure of Matsunaga, the presently claimed invention is anticipated by Matsunaga. Applicants respectfully disagree.

As a first matter, Matsunaga fails to disclose or suggest Applicants' recited catalyst. Second, Matsunaga fails to disclose or suggest modification of a generic structure with a level of specificity which would enable one of skill in the art to produce Applicants' recited catalyst. As such, the mere disclosure of a laundry list of catalyst compounds does not rise to the level of anticipation under 35 U.S.C. §102.

It is well established that a generic formula which encompasses a vast number of compounds does not describe and thus anticipate all compounds embraced therein merely because they are within the scope of the formula. *In re Petering et al.* (CCPA 1962) 301 F.2d 676, 133 USPQ 275; *E.I. du Pont de Nemours & Co. v. Ladd, Comr. Pats., et al.* (CADC 1964) 328 F.2d 547, 140 USPQ 297. There can be no anticipation where the reference is so broad that the likelihood of arriving at the claimed composition would be the same as discovering the combination of a safe by an inspection of its dials, *Ex parte Garvey* (POBA 1939) 41 USPQ 583; *Ex parte Starr* (POBA 1938) 44 USPQ 545, nor is anticipation made out by a hindsight selection based on an applicant's disclosure of variables of a broad generic disclosure. *In re Ruschig et al.* (CCPA 1965) 343 F.2d 965, 145 USPQ 274.

As pointed out above, the broad and vague language of Matsunaga used to describe other catalysts includes literally millions of possible embodiments, limited only by the imagination of the artisan. Matsunaga does not constitute "a description of a very limited class of compounds" (See *In re Petering*, 301 F.2d 676, 681 (CCPA 1962)) such that Matsunaga would anticipate the presently claimed invention. On the contrary, in Matsunaga, the specification is "open-ended and literally discloses an undue number of compounds from which one skilled in the art must select in order to obtain" Applicants' presently claimed invention (see *Rene Heymes, et al., v. Takao Takaya, et al.*, (CAFC 1989) 867 F.2d 616, emphasis added.)

As such, Matsunaga fails to disclose all of the recited limitations of Applicant's presently claimed invention and thus cannot reasonably be found to anticipate the presently claimed invention.

The cited prior art fails to disclose or suggest all of the limitations recited in Applicants' presently claimed invention. Applicants respectfully request that all rejections be withdrawn and solicit a prompt notice of allowability. In the alternative, Applicants invite the Office to telephone the undersigned attorney if there are any other issues outstanding which have not been presented to the Office's satisfaction.

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Respectfully submitted,

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